

RAYAGADA AUTONOMOUS COLLEGE
FIRST SEMESTER INTERNAL ASSESSMENT-2017-18

Class : +31st year Sc.

Subject : Physics Core Paper I(Mathematical Physics I)

Full Marks: 15

Time : 45 Minutes

Answer any one question.

Q1. Prove that $\vec{A} \times (\vec{B} \times \vec{C}) = \vec{B} (\vec{A} \cdot \vec{C}) - \vec{C} (\vec{A} \cdot \vec{B})$.

Hence evaluate $\vec{A} \times (\vec{B} \times \vec{C}) + \vec{B} \times (\vec{C} \times \vec{A}) + \vec{C} \times (\vec{A} \times \vec{B})$

Find the volume of the Parallelepiped whose sides are $\vec{A} = 2\hat{i} - 3\hat{j} + 4\hat{k}$, $\vec{B} = \hat{i} + \hat{j} - 2\hat{k}$ and $\vec{C} = 3\hat{i} + 4\hat{j} - 2\hat{k}$

Q2. Evaluate the following,

a) $\int_0^{\pi/2} \int_{\pi/2}^{\pi} \cos(x+y) dx dy$

b) Using $u=x+y$, $v=2x-y$, find $\iint_R (x+y) dx dy$ where R is the surface of parallelogram bounded by $x+y=1$, $x+y=3$, $2x-y=0$, $2x-y=4$.

Q3. Define Dirac Delta function. Represent the same as the limiting case of Gaussian function and rectangular function.

XXXXXXXXXXXXXXXXXXXXXXX

+3 SCIENCE 1st YEAR,

RAYAGADA AUTONOMOUS COLLEGE
FIRST SEMESTER INTERNAL ASSESMENT-2017-18

Class : +31st year Sc.

Subject : Physics Core Paper II(Mec hanics)

Full Marks: 15

Time : 45 Minutes

Answer any one question.

Q1. Discuss the theory of damped vibration. Find the relation between relaxation time and modulus of decay.

Q2. Find out the gravitational potential and field due to a solid sphere for different points.

Q3. State and prove Parallel Axis theorem. Obtain an expression for moment of inertia of a thin rod

- a) About an axis passing through the centre of mass and perpendicular to its length.
- b) About an axis passing through one end of the rod and perpendicular to its length.

XXXXXXXXXXXXXXXXXXXXXXX

RAYAGADA (AUTO) COLLEGE, RAYAGADA.
+3 SCIENCE 1st YEAR,
1st INTERNAL ASSESSMENT EXAM-2017

SUB:- MATHEMATICS

PAPER:- G E-I(for physics Hons)

TIME:-45 Min

F.M:- 20

Answer any four :-

4X5=20

1. Investigate the continuity at (0,0) of

$$f(x) = \begin{cases} \frac{x^2 - y^2}{x^2 + y^2}, & (x, y) \neq 0 \\ 0, & (x, y) = 0 \end{cases}$$

2. Find the maxima and minima of the function

$$F(x, y) = x^3 + y^3 - 3x - 12y + 20.$$

3. At what point on the curve $y = x^2 - 6x - 2$ is the radius of curvature a minimum.

4. Solve $\frac{dy}{dx} = \frac{x+y+4}{x-y-6}$.

5. Solve $(x^2 - 2y^2) dx + xy dy = 0$

... college, Nayagada
1st Sem Internal Assessment 2019

Class: +3 1st year SC
Subject: ODIA (AECC)
Paper: 1st

Full mark: 10
Time: 45 min

ଲୋନାଲୋନ କିଏ ? ଏହାକୁ ଅନୁବିଦ୍ୟ ସମ୍ପର୍କରେ
ଆଲୋଚନା କର । ଆଶାକା
ଲୋନାଲୋନ ଏ ପ୍ରକାରରେ ସମ୍ପର୍କରେ ଆଲୋଚନା କର ।